Patent
Attorney's Docket No. 031211-060

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	)	
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Mathias LEHMANN et al.	)	Group Art Unit: Unassigned
	)	
Application No.: Unassigned	)	Examiner: Unassigned
	)	
Filed: May 25, 2001	)	
	)	
For: PHOTOGRAPHIC IMAGE CAPTURING DEVICE WITH LIGHT EMITTING DIODES	)	

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Kindly amend the above-identified application as follows:

IN THE SPECIFICATION:

Kindly replace the paragraph beginning at page 1, line 7, with the following:

A scanner for the scanning of photographic films, which includes light emitting diodes as light source, is know from EP 0 948 191 A2 (corresponding US 5,982,957), hereby incorporated by reference in its entirety. In that device, light from differently colored light emitting diodes is mixed in an integrated device, a film to be shone-through is exposed to the mixed light, and the light transmitted by the film is captured by a CDD detector. The purpose of this arrangement is to achieve the most optimal spectral sensitivity for the scanner. The spectral sensitivity of the scanner results from a combined

function of the spectrum of the light source and the spectral sensitivity of the CCD sensor. The desired spectral sensitivity of the scanner is achieved in that the emission spectrum of the light source is mixed by suitable combination of LEDs with different spectral emission characteristics. The integration device provides for a mixing of the different spectra of the LEDs. Conventional LEDs with a lens body are thereby used which are mounted on a circuit board.

Kindly replace the paragraph beginning at page 5, line 8, with the following:

The cavity preferably has a reflectivity of above 90%, especially preferably above 95% or 99%. For the purpose, the cavity is preferably coated with a white coating which diffusely reflects the light. For example, barium sulfate. "Spectralon" from the company Labsphere with a high reflection coefficient of 99% can also be used as reflective material. The inner surface of the cavity is especially preferably lined with a flexible material, for example, in the form of a foil. For example the material described in U.S. patent 5,892,961, hereby incorporated by reference in its entirety, and sold by the Gore company under the name "Whitestar" can be used. However, any other materials such as lacquers, foils or coatings can be used to achieve reflection.

Kindly replace the paragraph beginning at page 8, line 2, with the following:

The above objects and features of the present invention will be more apparent from the following description of the preferred embodiments with reference to the accompanying drawings, wherein:

Kindly add the following new paragraph after the paragraph beginning at page 11, line 15:

--It will be appreciated by those skilled in the art that the present invention can be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The presently disclosed embodiments are therefore considered in all respects to be illustrative and not restricted. The scope of the invention is indicated by the appended claims rather than the foregoing description and all changes that come within the meaning and range and equivalence thereof are intended to be embraced therein.--

IN THE CLAIMS:

Please replace amended claims 1, 3, 4-10 with the following:

1. (Amended) Photographic capturing device for the capturing of photographic image information from photographic media, comprising:

a light integrator for receiving and homogenizing light emitted from LED chips in a color specific for respective LED chips and for emitting the light from an output opening in order to illuminate a photographic medium carrying photographic image information;

a detection means for detecting light modulated by the photographic medium according to the image information; and

a number of LED chips each having a specific light emission color, the number of LED chips including LED of at least three different colors, wherein the LED chips are mounted on at least one heat conducting substrate with the LED chips in heat conducting contact with the substrate.

3. (Amended) Photographic capturing device according to claim 1, wherein the LED are densely packed for the achievement of a high light density such that they cover more than 10% of a surface over which they are distributed.

4. (Amended) Photographic capturing device according to claim 1, wherein a microlens arrangement, which includes a multitude of microlenses, is positioned on a light integrator side of the LED chips in such a way that each microlens is associated with one LED chip for bundling of light emitted therefrom.

5. (Amended) The photographic capturing device according to claim 1, wherein the light integrator is formed as a cavity in which light is reflected and from which light is emitted through an output opening, and wherein the LED chips are positioned at least one of at and in the input openings of the cavity in such a way that the chips directly illuminate a majority of the cavity without reflection and without directly illuminating the output opening.

6. (Amended) Photographic capturing device according to claim 1, wherein respectively at least one group of blue, green, and red emitting LED chips is provided, and wherein more blue and green LED are provided than red LED chips.

7. (Amended) Photographic capturing device according to claim 1, comprising:

a control arrangement for groupwise control of the LED chips, wherein each group includes LED chips of an emission color equal within a group but different from group to group, the control arrangement activating the light emission of the groups individually and sequentially respectively for a preselected time, and wherein a photoelectric converter is provided as detection means for producing signals the reading of which is synchronized with light emission of the groups for distinguishing received emission color, so that the output signals can respectively be associated with the emission of a specific group.

8. (Amended) Photographic capturing device according to claim 1, comprising:

a first optical arrangement for exposing the photographic medium positioned at a preselected position onto the detection means, and a second optical arrangement for projecting the output opening enlarged onto the first optical arrangement.

9. (Amended) Photographic capturing device according to claim 1, comprising:

a holding arrangement for holding the photographic medium at a position preselected for the illumination, the holding arrangement including at least two masks, wherein each mask is provided for a photographic medium with a different format, and for selectively holding the photographic medium with a suitable mask at the preselected position, wherein respectively one of the masks is selectively positioned by way of an exchange mechanism at the preselected position.

10. (Amended) The photographic capturing device according to claim 1, constructed as at least one of a scanner or printer.

REMARKS

The amendments were made to place the application in a more suitable form prior to examination. Favorable consideration is respectfully requested.

Respectfully submitted,

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Date: May 25, 2001

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Marked-up Copy

Page 1, Paragraph Beginning at line 7

A scanner for the scanning of photographic films, which includes light emitting diodes as light source, is know from EP 0 948 191 A2 (corresponding US 5,982,957), hereby incorporated by reference in its entirety. In that device, light from differently colored light emitting diodes is mixed in an integrated device, a film to be shone-through is exposed to the mixed light, and the light transmitted by the film is captured by a CDD detector. The purpose of this arrangement is to achieve the most optimal spectral sensitivity for the scanner. The spectral sensitivity of the scanner results from a combined function of the spectrum of the light source and the spectral sensitivity of the CCD sensor. The desired spectral sensitivity of the scanner is achieved in that the emission spectrum of the light source is mixed by suitable combination of LEDs with different spectral emission characteristics. The integration device provides for a mixing of the different spectra of the LEDs. Conventional LEDs with a lens body are thereby used which are mounted on a circuit board.

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Page 5, Paragraph Beginning at line 8

The cavity preferably has a reflectivity of above 90%, especially preferably above 95% or 99%. For the purpose, the cavity is preferably coated with a white coating which diffusely reflects the light. For example, barium sulfate. "Spectralon" from the company Labsphere with a high reflection coefficient of 99% can also be used as reflective material. The inner surface of the cavity is especially preferably lined with a flexible material, for example, in the form of a foil. For example the material described in U.S. patent 5,892,961, hereby incorporated by reference in its entirety, and sold by the Gore company under the name "Whitestar" can be used. However, any other materials such as lacquers, foils or coatings can be used to achieve reflection.

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Page 8, Paragraph Beginning with line 2

[Further features significant for the invention are discussed in the following description of different embodiments with reference to the drawings. Features of different embodiments can thereby be combined. Equal reference numbers referred to equal parts.]

The above objects and features of the present invention will be more apparent from the following description of the preferred embodiments with reference to the accompanying drawings, wherein:

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Marked-up Claims 1, 3, 4-10

1. (Amended) Photographic capturing device for the capturing of photographic image information from photographic media, comprising:

a light integrator for receiving and homogenizing light emitted from LED chips in a color specific for [the] respective LED [chip] chips and for emitting the light from an output opening in order to illuminate a photographic medium carrying photographic image information[,];

a detection means for detecting [the] light modulated by the photographic medium according to the image information[,]; and

a number of LED chips each having a specific light emission color, the number of LED chips including LED of at least three different colors, wherein the LED chips [being] are mounted on at least one heat conducting substrate with the LED chips [being] in heat conducting contact with the substrate.

3. (Amended) Photographic capturing device according to claim 1, wherein the LED are [so] densely packed for the achievement of a high light density such that they cover more than 10% of [the] a surface over which they are distributed.

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Marked-up Claims 1, 3, 4-10

4. (Amended) Photographic capturing device according to claim 1, wherein a microlens arrangement, which includes a multitude of microlenses, is positioned on a light integrator side of the LED chips in such a way that each microlens is associated with one LED chip for [the] bundling of [the] light emitted therefrom.

5. (Amended) The photographic capturing device according to claim 1, wherein the light integrator is formed as a cavity in which light is reflected and from which light is emitted through an output opening, [whereby] and wherein the LED chips are positioned at least one of at [or] and in the input openings of the cavity in such a way that the chips directly illuminate a majority of the cavity without reflection and without directly illuminating the output opening.

6. (Amended) Photographic capturing device according to claim 1, wherein respectively at least one group of blue, green, and red emitting LED chips is provided, [whereby] and wherein more blue and green LED are provided than red LED chips.

7. (Amended) Photographic capturing device according to claim 1, [further] comprising:

a control arrangement for [the] groupwise control of the LED chips, [whereby] wherein each group includes LED chips of an emission color equal within [the] a group but

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Marked-up Claims 1, 3, 4-10

different from group to group, the control arrangement activating the light emission of the groups individually and sequentially respectively for a preselected time, [whereby] and wherein a photoelectric converter is provided as detection means for producing signals the reading of which is synchronized with [the] light emission of the groups for distinguishing [the] received emission color, so that the output signals can respectively be associated with the emission of a specific group.

8. (Amended) Photographic capturing device according to claim 1, [further] comprising:

a first optical arrangement for exposing the photographic medium positioned at a preselected position onto the detection means, and a second optical arrangement for projecting the output opening enlarged onto the first optical arrangement.

9. (Amended) Photographic capturing device according to claim 1, [further] comprising:

a holding arrangement for holding the photographic medium at a position preselected for the illumination, the holding arrangement including at least two masks, [whereby] wherein each mask is provided for a photographic medium with a different format, and for selectively holding the photographic medium with a suitable mask at the

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Marked-up Claims 1, 3, 4-10

preselected position, [whereby] wherein respectively one of the masks is selectively positioned by way of an exchange mechanism at the preselected position.

10. (Amended) The photographic capturing device according to [one of claims 1 to 9] claim 1, constructed as at least one of a scanner or printer.